

AMENDMENTS TO THE SPECIFICATION

Please replace the paragraph on page 1 immediately following the title, beginning a line 5, with the following amended paragraph:

Background of the Invention

Field of the Invention

The invention relates to a new method and system for a session service in a wireless session protocol (WSP) between a user and a server terminal.

Please insert the following heading line between the first and second paragraphs, on page 1.

Description of the Prior Art

Please replace the paragraph beginning on page 1, line 21, with the following amended paragraph:

The Session layer protocol family in the WAP architecture is called the Wireless Session Protocol, WSP. WSP provides the upper-level application layer of WAP with an interface for session services and management. One example of a session service is a connection-mode service that operates above a transaction layer protocol called Wireless Transport Layer (WTP), see See also Wireless Application Protocol: Wireless Transport Protocol specification, version 30 April 1998, by Wireless Application Protocol Transport Working ~~Group~~, Group.

Please replace the paragraph beginning on page 2, line 4, with the following amended paragraph:

The Wireless Session ~~Protocol~~ Protocol comprises one protocol most suited for browsing applications (WSP/B). WSP/B provides HTTP 1.1 functionality and incorporates new features such as long-lived sessions, a common facility for data push, capability negotiation, and session suspend/resume. HTTP 1.1 is disclosed in Fielding, R., et. al., "Hypertext Transfer Protocol—HTTP/1.1", RFC

2068, UC Irvine, January 1997. The protocols in the WSP family are ~~optimised~~ optimized for low bandwidth bearer networks with relatively long latency.

Please replace the paragraph beginning on page 2, line 11, with the following amended paragraph:

The WAP Architecture is very similar to the Internet Architecture. Fig.1 shows a comparison between the Internet Architecture 10 and the WAP Architecture 20. The Internet Architecture 10 comprises a Hypertext Markup Language (HTML) 12, e.g. Java Script, a Hypertext Transfer Protocol (HTTP) 14, Transport Layered Security (TLS) / Secure Sockets Layer (SSL) 16, and a Transport Configuration Protocol (TCP) / User Datagram Protocol (UDP) 18. The Internet Architecture 10 is a well known prior art, and is disclosed e.g. in US-A-5,657,390. The WAP Architecture 20 comprises a Wireless Application Protocol (WAE) 22 corresponding to HTML 12, a Wireless Session Layer (WSP) 24 corresponding to HTTP 14, a Wireless Transport Layered Security (WTLS) 26 corresponding to TLS / SSL 16, and a Wireless Transport Layer (WTP) 28 corresponding to TCP / UDP 18. Further, the WAP Architecture comprises different bearers 29 like e.g. SMS, USSD and CDMA 30. There is also a possibility to implement different kinds of services and applications in the WAP Architecture, ~~e.g. for example~~, Value Added Services (VAS). The WAP Architecture 20 is a well known prior art and more information about the different blocks WAE, WSP, WTLS, WTP and bearers is found in ~~e.g. <http://www.wapforum.org/docs/technical.htm>~~ on the Internet.

Please replace the paragraph beginning on page 3, line 1, with the following amended paragraph:

The present invention relates to WSP, which provides a means for organized exchange of content between co-operating client/server applications. Specifically, it provides the applications with a means to:

- a) establish an optionally secure, reliable session from client to server, and release the session in an orderly manner;
- b) exchange content between client and server; and
- c) suspend and resume the session.

Please replace the paragraph beginning on page 3, line 14, with the following amended paragraph:

~~In e.g. In, for example,~~ the GSM system it is relatively expensive to transfer data. At the same time it is desired to reduce the size of the required memory space in the phone.

Please replace the paragraph beginning on page 3, line 18, with the following amended paragraph:

EP-A2-0,851,696 discloses a way of providing data from an information database in response to a request from a mobile station in a wireless network, by using short messaging service, SMS. The subscriber uses a mobile station to place a call via the wireless network and a PSTN to an information service provider. An identification (ID) of the mobile station is forwarded to the information service provider. That provider can then use the ID to retrieve a user personal identification number (PIN) or user identification number. The database information service provider constructs a message containing the desired data and the appropriate PIN or user ID number and forwards that to a message ~~centre~~ center. The message ~~centre~~ center then forwards the data from the provider to the mobile station as an SMS.

Please replace the paragraph beginning on page 3, line 30, with the following amended paragraph:

However, ~~this document~~ EP-A2-0,851,696 uses the ID every time it retrieves a user PIN or user ID number. Thus, this procedure has to be repeated every time when the user sends a request to the server. This means that it will not be easier or faster when the user would like to establish another session. This is a major drawback since the cost for a call will then increase. Also, this document does not describe how it is possible to support different types of data formats/types, upon sending/receiving a request. One example of a data format/type supported by WAP is the MIME multipart format, which transports composite data ~~objects (e.g. multipart/mixed), see~~ objects (for example, multipart/mixed). See WAP WSP draft version 02-Apr-1998, 7.4 Multipart data. WSP defines a compact binary form of the

MIME multipart entity and the content type. Thus, there is a need to support different data formats of a WSP session, and to increase the speed to establish a session.

Please replace the paragraph beginning on page 4, line 12, with the following amended paragraph:

WO/A2/98/34414 discloses a communication system providing a subscriber unit (~~e.g. a portable phone~~ for example, a portable phone) with access to an information network through gateway equipment that is coupled to a network server. The network server conveys data to the subscriber unit, as a respond to a request sent by the subscriber unit, via an SMS message. The request includes an identifier, which is used to communicate with the originating communication device via a message service (SMS) that provides external access to the radio communication system. The information network may be a public access network, such as the Internet, comprising world wide web (www) information sites.

Please replace the paragraph beginning on page 4, line 23, with the following amended paragraph:

However, as in EP-A2-0,851,696, the system in WO/A2/98/34414 has to repeat its procedure every time the user sends a request to the server. Thus, it will neither be easier or faster when the user would like to establish another ~~session, i.e. it session,~~ that is, it will establish the session as it usually does. In other words, the network has to identify the user every time the user would like to obtain data.

Please add the following title on page 4, at line 3:

SUMMARY OF THE INVENTION

Please replace the paragraph beginning on page 4, line 4, with the following amended paragraph:

~~An object of the~~ The invention is to ~~provide~~ provides a method of handling Wireless Session Protocol (WSP) sessions in such a way that the amount of redundant information is reduced.

Please replace the paragraph beginning on page 4, line 30, with the following amended paragraph:

According to the preferred embodiment of the invention the server only stores the user profile information for a predetermined period of time, ~~e.g. 3 hours~~ time, for example, 3 hours or 3 days. The period of time may be differentiated in dependence of the kind of subscription the user has. The server deletes the user profile information from the database memory upon expiration of said period of time. In order to avoid double use of the same communication terminal identification number the server informs the communication terminal about the duration of this period, whereby the terminal knows when the period has expired. When the period has expired and the communication terminal starts a new session it has to transfer the user profile once more. When the server has stored the user profile information once more it provides the communication terminal with a new communication terminal identification number that uniquely identifies the communication terminal for a new period.

Please replace the paragraph beginning on page 6, line 13, with the following amended paragraph:

The invention furthermore relates to a method of handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding server, wherein: the communication terminal initiates a session by forwarding a request of data to the server, said ~~request~~ request comprises an identification of the requested data and a header indicating the data format which shall be handled by the communication terminal; the server upon receipt of a request generates a communication terminal identification number and stores said header associated with said communication terminal identification number; said server replies to the request by forwarding the requested data and the communication terminal identification number to the requesting communication terminal; said communication terminal stores the communication terminal identification number in a memory. The server stores the user profile information included in the header and this information may be used later when a new session is initiated.

Please replace the paragraph beginning on page 6, line 28, with the following amended paragraph:

The invention furthermore relates to a wireless communication network for handling Wireless Session Protocol (WSP) sessions between a wireless communication terminal and a corresponding server connected via said network, comprising means in the communication terminal for initiating a session by forwarding a request of data to the server, said ~~requests~~ request comprises an identification of the requested data and a communication terminal identification number provided by the server; a database memory connected to the server in order to store user profile information based on the communication terminal identification number received in the request, said user profile information indicates the data format which may be handled by the communication terminal; processing means in order to recall the stored user profile information corresponding to the communication terminal identification number and for replying to the request by forwarding the requested data in the format defined by the user profile information via transmission means to the communication terminal. Such a network will be especially useful when it is used as a cellular network, ~~e.g. a GSM network~~ for example, a GSM network and the bearer for the request is the standard data transfer or a chain of SMS messages. The savings in cost for a sessions will be important for the user since the saving of the re-transmission of resending the user profile information several times may reduce the number of transmitted messages by up to 50 %.

Please add the following title on page 8, at line 27:

BRIEF DESCRIPTION OF THE DRAWINGS

Please add the following title on page 9, at line 10:

DESCRIPTION OF THE PREFERRED EMBODIMENT

Please replace the paragraph beginning on page 9, line 11, with the following amended paragraph:

Fig. 2 shows a wireless communication network for handling Wireless Session Protocol (WSP). The network comprises a wireless communication terminal 100,

comprising an antenna 110, and an server 220 connected to a server antenna 200. The communication terminal 100 is for example an ordinary cellular phone provided with a Wireless Application Protocol (WAP). The server is provided by an operator and can handle WAP applications. The WAP comprises ~~the WSP on which the present invention is based on.~~ How ~~the WSP~~ is implemented in WAP is described in detail in the Wireless Application Protocol Architecture Specification; Version 0.9; by Wireless Application Protocol Architecture Working Group [[:]] found on the Internet. ~~http://www.wapforum.org/docs/WAPArch-Sep-97.pdf.~~

Please replace the paragraph beginning on page 10, line 1, with the following amended paragraph:

If the request contains a heading containing user profile information this information is stored in a database memory 222 for use when the server 220 replies. If the request contains a communication terminal identification ~~number~~ the number, the corresponding user profile information is recalled from the database memory 222 when the request is replied to. ~~The~~ When the server 220 is ready for ~~responding the responding, the~~ processing means 221 transmits the response via output means 223 to the communication terminal 100 via said output.

Please replace the paragraph beginning on page 10, line 9, with the following amended paragraph:

When using a connectionless WSP session, it is not possible to store WSP headers as a part of a session state at both ends of the connection ~~peers, i.e. between peers, that is~~ the terminal 100 and the server 220. Therefore, all headers must be re-sent every time a WAP user agent requests a resource from the server 220 via a WAP proxy. Over a low bandwidth, high latency bearer, such as Short Messaging Services (SMS), this leads to an unacceptable overhead (only 50 – 75 % of the data sent is pay-load). The present invention solves this problem by using a cookie for storing session headers on the server within the user agent profile (uaprof) resource file defined by WAP. The idea is, that a request of data 120, conveys headers to the server 220, after which the user agent (client) uses a file-handle to reference the information stored on the server. It is also possible for the operator to provide some pre-defined file-handle in the communication ~~terminal, i.e. the terminal, that is,~~

operator has some cookies on the server. Therefore, it is not always necessary for the user agent to define a header, which saves ~~a lot of~~ significant time for the user agent.

Please replace the paragraph beginning on page 11, line 7, with the following amended paragraph:

~~the~~ The communication terminal can initiate a session comprising a header in a request 140 indicating the data format which can be handled by the communication terminal 100;

Please replace the paragraph beginning on page 11, line 17, with the following amended paragraph:

As an alternative method of the invention, which does not require the server to have pre-defined ~~cookies~~ is cookies, is disclosed by the following steps by reference to Fig.2:

Please replace the paragraph beginning on page 12, line 9, with the following amended paragraph:

In both of the methods it is possible for the server to define a period of time in which the user profile information can be stored in the database memory. It is also possible for the server to delete the user profile information from the database memory upon expiration of the defined period of time. The time may for example be 3 hours or 3 days. The period of time may be differentiated in dependence of the kind of subscription the user has. In order to avoid double use of the same communication terminal identification ~~number~~ the number, the server informs the communication terminal about the duration of this period, whereby the terminal knows when the period has expired. When the period has expired and the communication terminal starts a new ~~session~~ it session, it has to transfer the user profile once more. When the server has stored the user profile information once more it provides the communication terminal with a new communication terminal identification number that uniquely identifies the communication terminal for a new period.

Please replace the paragraph beginning on page 12, line 24, with the following amended paragraph:

The header data structure used by the terminal and the server comprises a sequence of header fields, followed by ~~e.g. image-type-specific~~ by, for example, image-type-specific data and actual image data. The header field comprises an image type identifier of a multi-byte length (*TypeField*), an octet of general header information (*FixHeaderField*), followed by zero or more extension header fields (*ExtField*). The extension headers may be of type binary 00 through binary 11. A header of Type 00 ~~could e.g. indicate~~ could, for example, indicate a multi-byte bitfield used to specify additional header information. The first bit may be set if a type 00 extension header is set if more data follows. A header of the Type 11 indicates a sequence of parameter/value pairs. These can be used for ~~optimisations~~ optimizations and special purpose ~~extensions, e.g., animation extensions, for example, animation~~ image formats. The "parameter size" tells the length (1-8 bytes) of the following parameter name. The "value size" gives the length (1-16 bytes) of the following parameter value. The concatenation flag indicates whether another parameter/value pair will follow after reading the specified bytes of data. The actual ~~organisation~~ organization of the image data depends on the image type.

Please replace the paragraph beginning on page 13, line 9, with the following amended paragraph:

Fig. 3 shows an example of the establishment of a session in accordance with the present invention. The session uses the Wireless Session Protocol, which is to be established between a wireless communication terminal and a corresponding server, START 300. The communication terminal initiates a session by forwarding a request of data to the server, "FORWARD REQUEST" 310. This request comprises an identification of the requested data and a header indicating the data format, which shall be handled by the communication terminal. If the server does not receive the request, it could be possible to forward a new request, "RECEIVED REQUEST?" 320. When the server has received the request, the server can check whether the identification is ~~recognised~~ recognized or not, "ID UNKNOWN" 330, ~~i.e. if 330, that is, if~~ the identification has been stored on the server as a communication terminal identification number or not. If the identification of the terminal is ~~recognised~~

recognized, then the server recalls user profile information from an associated database memory corresponding to the communication terminal identification number. The user profile information indicates a data format which shall be handled by the communication terminal. The server sends a reply to the request by forwarding the requested data in the format defined by the user profile information, "SEND REPLY" 340. Thereafter, the session can be ended by the user, "END" 345.

Please replace the paragraph beginning on page 13, line 30, with the following amended paragraph:

If the identification of the terminal is not ~~recognised~~ recognized, "ID UNKNOWN" 330, then the server upon receipt of the request generates a communication terminal identification number, "GENERATE ID" 350. Thereafter, the server stores the header associated with said communication terminal identification number, "STORE HEADER" 360. The server replies to the request by forwarding the requested data and the communication terminal identification number to the requesting communication terminal, "SEND REPLY + ID" 370. Finally, the communication terminal stores the communication terminal identification number in a memory, "STORE ID" 380. Thereafter, the user may choose to end the session, "END" 345.